

[illegible]

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```
LL      IIIIII  88888888  FFFFFFFFFF  AAAAAA  000000
LL      IIIIII  88888888  FFFFFFFFFF  AAAAAA  000000
LL      II      88      88  FF      AA      AA  00      00
LL      II      88      88  FF      AA      AA  00      00
LL      II      88      88  FF      AA      AA  00      00
LL      II      88      88  FF      AA      AA  00      00
LL      II      88888888  FFFFFFFF  AA      AA  00      00
LL      II      88888888  FFFFFFFF  AA      AA  00      00
LL      II      88      88  FF      AAAAAAAAAA  00      00
LL      II      88      88  FF      AAAAAAAAAA  00      00
LL      II      88      88  FF      AA      AA  00      00
LL      II      88      88  FF      AA      AA  00      00
LL      II      88888888  FF      AA      AA  000000
LLLLLLLLLLLL  IIIIII  88888888  FF      AA      AA  000000
LLLLLLLLLLLL  IIIIII  88888888  FF      AA      AA  000000
                                     ....
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```

```
LL      IIIIII  SSSSSSSS
LL      IIIIII  SSSSSSSS
LL      II      SS
LL      II      SS
LL      II      SS
LL      II      SS
LL      II      SSSSSS
LL      II      SSSSSS
LL      II      SS
LL      II      SS
LL      II      SS
LL      II      SS
LL      II      SSSSSS
LLLLLLLLLLLL  IIIIII  SSSSSSSS
LLLLLLLLLLLL  IIIIII  SSSSSSSS
```

```
1 0001 0 MODULE LIB$SYS_FAO (
2 0002 0
3 0003 0 IDENT = '1-009' ! File: LIBFAO.B32 EDIT: RKR1009
4 0004 0
5 0005 0 ) =
6 0006 1 BEGIN
7 0007 1
8 0008 1 *****
9 0009 1 *
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27 0027 1 *
28 0028 1 *
29 0029 1 *****
30 0030 1
31 0031 1
32 0032 1 ++
33 0033 1 FACILITY: General Library Support
34 0034 1
35 0035 1 ABSTRACT:
36 0036 1
37 0037 1 This routine calls $FAOL for the caller, returning the
38 0038 1 resulting string using the semantics of the caller's string.
39 0039 1 The length of the resultant string is limited to 256 bytes max and
40 0040 1 truncation may occur.
41 0041 1
42 0042 1 ENVIRONMENT: VAX-11 User Mode
43 0043 1
44 0044 1 AUTHOR: R. Reichert, CREATION DATE: 20-SEPT-1979
45 0045 1
46 0046 1 MODIFIED BY:
47 0047 1
48 0048 1 1-001 - Original. RKR 20-SEPT-1979
49 0049 1 1-002 - Change name to LIB$SYS_FAO. RKR 15-OCT-79
50 0050 1 1-003 - Change logic for status returned. Improve comments.
51 0051 1 RKR 20-OCT-79
52 0052 1 1-004 - P1 can be a value parameter with value 0, so the
53 0053 1 NULLPARAMETER builtin doesn't work on it. JBS 28-OCT-1979
54 0054 1 1-005 - Improve description of routine. RKR 1-NOV-79
55 0055 1 1-006 - Change STR$ codes to LIB$ codes. RKR 22-JAN-1980
56 0056 1 1-007 - Enhance to recognize additional classes of string descriptors
57 0057 1 on output by always getting data into internal buffer and
```



```

: 58      0058 1  | using LIB$SCOPY DXDX6 to deliver to caller's buffer.
: 59      0059 1  | LIB$ANALYZE_SDESC_R3 is used to compute the number of bytes
: 60      0060 1  | actually copied after the copy operation completes.
: 61      0061 1  | Change to use LIB$SCOPY_DXDX6 instead of STR$COPY_DX. This
: 62      0062 1  | avoids having to change STR$ statuses to LIB$ statuses and
: 63      0063 1  | eliminates need for a handler.
: 64      0064 1  | RKR 29-MAY-1981.
: 65      0065 1  | 1-008 - Add special-case code to process string descriptors that
: 66      0066 1  | "read" like fixed string descriptors. RKR 7-OCT-1981.
: 67      0067 1  | 1-009 - Redirect jsb's from LIB$ANALYZE_SDESC_R3 to
: 68      0068 1  | LIB$ANALYZE_SDESC_R2. Use LIB$SCOPY_R_DX6 to do copying.
: 69      0069 1  | RKR 18-NOV-1981
: 70      0070 1  | --
: 71      0071 1  |
: 72      0072 1  | !<BLF/PAGE>
```

```

74 0073 1 |
75 0074 1 | SWITCHES:
76 0075 1 |
77 0076 1 |
78 0077 1 | SWITCHES ADDRESSING MODE
79 0078 1 | (EXTERNAL = GENERAL, NONEXTERNAL = WORD_RELATIVE);
80 0079 1 |
81 0080 1 |
82 0081 1 | LINKAGES:
83 0082 1 |
84 0083 1 | REQUIRE 'RTLIN:STRLNK'; ! Linkage to LIB$ANALYZE_SDESC_R2
85 0268 1 |
86 0269 1 | TABLE OF CONTENTS:
87 0270 1 |
88 0271 1 |
89 0272 1 | FORWARD ROUTINE
90 0273 1 | LIBSYS_FAO; ! Formated ASCII output
91 0274 1 |
92 0275 1 |
93 0276 1 | INCLUDE FILES:
94 0277 1 |
95 0278 1 |
96 0279 1 | REQUIRE 'RTLIN:RTLPSECT'; ! Macros for defining psects
97 0374 1 |
98 0375 1 | LIBRARY 'RTLSTARLE'; ! System symbols and macros
99 0376 1 |
100 0377 1 |
101 0378 1 | MACROS:
102 0379 1 |
103 0380 1 | NONE
104 0381 1 |
105 0382 1 | EQUATED SYMBOLS:
106 0383 1 |
107 0384 1 |
108 0385 1 | LITERAL
109 0386 1 | LOCAL_BUF_SIZE = 256;
110 0387 1 |
111 0388 1 |
112 0389 1 | PSECTS:
113 0390 1 |
114 0391 1 | DECLARE_PSECTS (LIB); ! Declare psects for LIB$ facility
115 0392 1 |
116 0393 1 | OWN STORAGE:
117 0394 1 |
118 0395 1 | NONE
119 0396 1 |
120 0397 1 | EXTERNAL REFERENCES:
121 0398 1 |
122 0399 1 |
123 0400 1 | EXTERNAL ROUTINE
124 0401 1 | LIB$ANALYZE_SDESC_R2 : LIB$ANALYZE_SDESC_JSB_LINK, ! Extract length
125 0402 1 | ! and address of
126 0403 1 | ! 1st data byte
127 0404 1 | ! from descriptor
128 0405 1 | LIB$COPY_R_DX6 : STRING_JSB ; ! Copy string
```

```
130 0406 1 GLOBAL ROUTINE LIBSSYS_FAO (          ! Formated ASCII output
131 0407 1
132 0408 1     CTRSTR,          ! addr of string desc. for ASCII control string
133 0409 1     OUTLEN,       ! addr of word in which to store output string
134 0410 1                      ! length (Optional)
135 0411 1     OUTBUF,       ! addr of output buffer string descriptor
136 0412 1     P1           ! the first of potentially 17 (max) additional
137 0413 1                      ! parameters.
138 0414 1
139 0415 1     ) =
140 0416 1
141 0417 1 ++
142 0418 1 FUNCTIONAL DESCRIPTION:
143 0419 1
144 0420 1     This routine calls $FAOL for the caller, returning the
145 0421 1     resulting string using the semantics of the caller's string. Since
146 0422 1     output is buffered to an internal buffer which is 256 bytes long,
147 0423 1     the length of the resultant string is limited to 256 bytes max and
148 0424 1     truncation may occur.
149 0425 1
150 0426 1     See $FAO description
151 0427 1
152 0428 1 FORMAL PARAMETERS:
153 0429 1
154 0430 1     CTRSTR.rt.dx      addr of string desc. for ASCII control string
155 0431 1
156 0432 1     OUTLEN.wv.r      addr of word in which to store output string
157 0433 1                      ! length (Optional parameter)
158 0434 1
159 0435 1     OUTBUF.wt.dx      addr of output buffer string descriptor
160 0436 1
161 0437 1     P1.xx.x          the first of potentially 17 (max)
162 0438 1                      ! additional parameters. (Optional parameter)
163 0439 1
164 0440 1 For additional description of parameters,
165 0441 1 see $FAO documentation.
166 0442 1
167 0443 1 IMPLICIT INPUTS:
168 0444 1
169 0445 1     NONE
170 0446 1
171 0447 1 IMPLICIT OUTPUTS:
172 0448 1
173 0449 1     NONE
174 0450 1
175 0451 1 COMPLETION CODES:
176 0452 1
177 0453 1     SS$ NORMAL      Procedure successfully completed
178 0454 1 From LIB$COPY R DX6
179 0455 1     LIB$_STRTRD     Success, but source string truncated
180 0456 1     LIB$_INSVIRMEM  Insufficient virtual memory
181 0457 1     LIB$_INVSTRDES  Invalid string descriptor
182 0458 1     LIB$_INVARG     Invalid argument ( usually an unrecognized
183 0459 1                      ! class of descriptor)
184 0460 1 From $FAOL
185 0461 1     SS$_BUFFEROVF   Successfully completed, but formatted output
186 0462 1                      ! string overflowed the output buffer and has
```



```
187 0463 1 |
188 0464 1 |      SSS_BADPARAM      been truncated.
189 0465 1 |                        An invalid directive was specified in the FAO
190 0466 1 |                        control string.
191 0467 1 |
192 0468 1 |      SIDE EFFECTS:
193 0469 1 |
194 0470 1 |      NONE
195 0471 1 |
196 0472 1 |      --
197 0473 1 |      BEGIN
198 0474 1 |
199 0475 1 |      BUILTIN
200 0476 1 |          ACTUALCOUNT,
201 0477 1 |          NULLPARAMETER,
202 0478 1 |          ACTUALPARAMETER;
203 0479 1 |
204 0480 1 |      LOCAL
205 0481 1 |          COPY_STATUS,      ! status from buffer copying
206 0482 1 |          STR_STATUS,      ! status from $FAOL call
207 0483 1 |          LOCAL_BUFF : VECTOR [LOCAL_BUF_SIZE, BYTE],      ! local buffer
208 0484 1 |          BUFFER_DESC : BLOCK [8, BYTE];      ! desc for local buffer
209 0485 1 |
210 0486 1 |      MAP
211 0487 1 |          OUTBUF : REF BLOCK [, BYTE],
212 0488 1 |          OUTLEN : REF VECTOR [, WORD];
213 0489 1 |
214 0490 1 |      +
215 0491 1 |      Construct a static descriptor to receive the data from the system
216 0492 1 |      service call
217 0493 1 |      -
218 0494 1 |          BUFFER_DESC [DSCSW_LENGTH] = LOCAL_BUF_SIZE;
219 0495 1 |          BUFFER_DESC [DSCSB_DTYPE] = DSCSK_DTYPE_T;
220 0496 1 |          BUFFER_DESC [DSCSB_CLASS] = DSCSK_CLASS_S;
221 0497 1 |          BUFFER_DESC [DSCSA_POINTER] = LOCAL_BUFF;
222 0498 1 |
223 0499 1 |      +
224 0500 1 |      Call $FAOL using the appropriate combination of caller's
225 0501 1 |      parameters, default parameters and local variables
226 0502 1 |      -
227 0503 1 |          STR_STATUS = $FAOL (CTRSTR = ACTUALPARAMETER (1),
228 0504 1 |                          OUTLEN = BUFFER_DESC,
229 0505 1 |                          OUTBUF = BUFFER_DESC,
230 0506 1 |                          PRMLST = (IF (ACTUALCOUNT () LSSU 4)
231 0507 1 |                              THEN 0 ELSE P1));
232 0508 1 |
233 0509 1 |      +
234 0510 1 |      Copy internal buffer to caller's buffer, letting LIB$SCOPY_R_DX6
235 0511 1 |      worry about its semantics.
236 0512 1 |      -
237 0513 1 |          COPY_STATUS = LIB$SCOPY_R_DX6 (.BUFFER_DESC [DSCSW_LENGTH],
238 0514 1 |                                      .BUFFER_DESC [DSCSA_POINTER],
239 0515 1 |                                      .OUTBUF);
240 0516 1 |
241 0517 1 |      +
242 0518 1 |      If caller supplied optional length parameter, update it.
243 0519 1 |      To do this accurately, we need to inspect the resulting descriptor
244 0519 1 |      as it appears after the copy. Get LIB$ANALYZE_SDESC_R2 to do it.
```

At this point we have 2 statuses that we could return to caller. Determine which one is the "most meaningful".

```
! If original SFAOL call failed, tell him about that
! else give him the copy status.
```

```
IF NOT .STR_STATUS THEN RETURN (.STR_STATUS)
ELSE RETURN (.COPY_STATUS) ;
```

END; ! end of LIBSYS_FAO

```
.TITLE  LIBSYS_FAO
.IDENT  \1-009\
```

```
.EXTRN LIB$ANALYZE_SDESC_R2
.EXTRN LIB$SCOPY_R_DX6
.EXTRN SYSSFAOL
```

.PSECT _LIB\$CODE,NOWRT, SHR, PIC,2

```
.ENTRY LIB$SYS_FAO, Save R2,R3,R4,R5,R6,R7,R8
```

MOVAB -260(SPT, SP

PUSHL #17694976
MOVAD LOCAL BUS

```
MOVAB LOCAL_BUFF, BUFFER_DESC+4
CMBB (AB) - #4
```

CMPB (AP), #4
BGEOL 15

BGEQU 15
CLRL -

CLRL
BRB

MOVAB P1, R0

NOVA	PT, RO
PUSHL	RO
RESEARCH	RESEARCH

PUSHAB BUFFER_DESC

PUSHAB BUFFER_DESC

			01FC	00000	
	5E	FEFC	CE	9E	00002
		010E0100	8F	DD	00007
04	AE	08	AE	9E	0000D
	04		6C	91	00012
			04	1E	00015
			7E	D4	00017
			06	11	00019
	50	10	AC	9E	0001B 1\$:
			50	DD	0001F
		04	AE	9F	00021 2\$:
		08	AE	9F	00024

: 0406
 :
 : 0494
 : 0497
 : 0507
 :

00000000G	00	04	AC	DD	00027	PUSHL	4(AP)	:
	58		04	FB	0002A	CALLS	#4, SYSSFAOL	:
	57	0C	50	D0	00031	MOVL	R0, STR_STATUS	0514
	52		AC	D0	00034	MOVL	OUTBUF, R7	:
	51		57	D0	00038	MOVL	R7, R2	0512
	50	04	AE	D0	0003B	MOVL	BUFFER_DESC+4, R1	:
			6E	3C	0003F	MOVZWL	BUFFER_DESC, R0	:
	53	00000000G	00	16	00042	JSB	LIB\$COPY_R DX6	:
	02		50	D0	00048	MOVL	R0, COPY_STATUS	:
			6C	91	0004B	CMPB	(AP), #2	0523
		08	28	1F	0004E	BLSSU	6\$:
			AC	D5	00050	TSTL	8(AP)	:
			23	13	00053	BEQL	6\$:
	02	03	A7	91	00055	CMPB	3(R7), #2	0530
			0B	1B	00059	BLEQU	3\$:
	50		57	D0	0005B	MOVL	R7, R0	0533
		00000000G	00	16	0005E	JSB	LIB\$ANALYZE_SDESC_R2	:
			03	11	00064	BRB	4\$	0530
	51		67	3C	00066	MOVZWL	(R7), OUTBUF_LEN	0538
	50		6E	3C	00069	MOVZWL	BUFFER_DESC, R0	0540
	51		50	D1	0006C	CMPL	R0, OUTBUF_LEN	:
			03	15	0006F	BLEQ	5\$:
	50		51	D0	00071	MOVL	OUTBUF_LEN, R0	:
08	8C		50	B0	00074	MOVW	R0, @OUTLEN	:
	04		58	E8	00078	BLBS	STR_STATUS, 7\$	0550
	50		58	D0	0007B	MOVL	STR_STATUS, R0	0551
				04	0007E	RET		:
	50		53	D0	0007F	MOVW	COPY_STATUS, R0	:
			04	00082	RET			0553

; Routine Size: 131 bytes, Routine Base: _LIB\$CODE + 0000

:	278	0554	1		
:	279	0555	1	END	! end of module LIBSSYS_FAO
:	280	0556	1		
:	281	0557	0	ELUDOM	

PSECT SUMMARY

Name	Bytes	Attributes
_LIB\$CODE	131	NOVEC, NOWRT, RD, EXE, SHR, LCL, REL, CON, PIC, ALIGN(2)

Library Statistics

File	-----	Symbols	-----	Pages	Processing
	Total	Loaded	Percent		

LIBSSYS_FAO
1-009

M 9
16-Sep-1984 00:51:03
14-Sep-1984 12:38:47

VAX-11 Bliss-32 V4.0-742
[LIBRTL.SRC]LIBFAO.B32;1

Page 8
(3)

; _\$255\$DUA2B:[SYSLIB]STARLET.L32;1 9776 10 0 581 00:00.8

COMMAND QUALIFIERS

; BLISS/CHECK=(FIELD,INITIAL,OPTIMIZE)/NOTRACE/LIS=LIS\$:LIBFAO/OBJ=OBJ\$:LIBFAO MSRC\$:LIBFAO/UPDATE=(ENHS:LIBFAO)

; Size: 131 code + 0 data bytes
; Run Time: 00:04.4
; Elapsed Time: 00:17.3
; Lines/CPU Min: 7527
; Lexemes/CPU-Min: 31608
; Memory Used: 72 pages
; Compilation Complete

0206 AH-BT13A-SE
VAX/VMS V4.0

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